WHAT IS CLAIMED IS:

1. A method for embedding magnets in a rotor core, comprising:

positioning a rotor core having a first positioning element into a die having a second positioning element, the first positioning element engaging the second positioning element to hold the rotor core in a fixed position with respect to the die;

filling slits in the rotor core with resinous magnet; and

applying a magnetic field to the resinous magnet in each slit to establish a magnetic orientation for the resinous magnet in each slit, the first positioning element and the second positioning element preventing the rotor core from moving under the influence of the magnetic field.

2. A rotor core produced in accordance with the method of Claim 1.

3. The method as defined in Claim 1, wherein the first positioning element is formed on an outside circumference of the rotor core, and wherein the second positioning element is formed on an inside circumference of the die, the method further comprising positioning the rotor core in the die with the first positioning element aligned with the second positioning element.

4. The method as defined in Claim 3, wherein the first positioning element comprises at least one recess in the outer circumference of the rotor core, and wherein the second positioning element comprises at least one projection on the inner circumference of the die.

5. The method as defined in Claim 4, wherein the first positioning element comprises a plurality of recesses in the outer circumference of the rotor core, and wherein the second positioning element comprises a plurality of projections on the inner surface of the die.

6. The method as defined in Claim 3, wherein the die comprises at least one ejector pin that abuts a face of the rotor core when the rotor core is positioned in the die, the method further comprising pushing on the at least one ejector pin to force the rotor core out of the die when the resinous magnet in the slits has hardened.

7. A rotor core produced in accordance with the method of Claim 3.

8. The method as defined in Claim 1, wherein the first positioning element is formed on at least one face of the rotor core, and wherein the second positioning element is formed on at least one surface of the die, the method further comprising positioning the rotor core in the die with the at least one face of the rotor core abutting the at least one surface of the die and with the first positioning element aligned with the second positioning element.

9. The method as defined in Claim 8, wherein the first positioning element comprises a recess in the at least one face of the rotor core, and wherein the second positioning element comprises a projection on the at least one surface of the die, the method comprising positioning the rotor core in the die with the recess aligned to receive the projection.

10. The method as defined in Claim 8, wherein the die comprises at least one ejector pin that abuts a face of the rotor core when the rotor core is positioned in the die, the method further comprising pushing on the at least one ejector pin to force the rotor core out of the die when the resinous magnet in the slits has hardened.

11. A rotor core produced in accordance with the method of Claim 8.

12. The method as defined in Claim 1, wherein the rotor core includes a shaft hole having a keying portion, and wherein the die includes an alignment pin having a keying portion that engages the keying portion of the shaft hole, the method comprising inserting the rotor core into the die with the keying portion of the shaft hole aligned with the keying portion of the alignment pin.

13. The method as defined in Claim 12, wherein the die comprises at least one ejector pin that abuts a face of the rotor core when the rotor core is positioned in the die, the method further comprising pushing on the at least one ejector pin to force the rotor core out of the die when the resinous magnet in the slits has hardened.

14. A rotor core produced in accordance with the method of Claim 1.

15. The method as defined in Claim 1, wherein the rotor core includes a shaft having the first positioning element formed thereon, and wherein the die includes a hole that receives the shaft, a portion of the hole forming the second positioning element, the method comprising

positioning the rotor core in the die with the first positioning element on the shaft aligned with the second positioning element portion of the hole.

16. The method as defined in Claim 15, wherein the shaft has an outer circumference and the first positioning element is a rib on the outer circumference of the shaft, the rib being in parallel with an axis of the shaft, and wherein the hole has an inner circumference and the second positioning element is a groove formed in the inner circumference of the hole and aligned with the rib when the shaft is positioned in the hole.

17. The method as defined in Claim 15, wherein the die comprises at least one ejector pin that abuts a face of the rotor core when the rotor core is positioned in the die, the method further comprising pushing on the at least one ejector pin to force the rotor core out of the die when the resinous magnet in the slits has hardened.

18. A rotor core produced in accordance with the method of Claim 15.

19. The method as defined in Claim 1, wherein the first positioning element comprises at least one of the slits of the rotor core, and wherein the second positioning element comprises at least one pin in the die, the at least one pin moveable in a direction aligned with an axis of the at least one pin, the method comprising positioning the rotor core in the die with the at least one of the slits aligned with the at least one pin, the at least one pin entering the slit to preclude movement of rotor core in any direction other than the direction aligned with the axis of the at least one pin, the method further comprising extracting the pin from the slit as the slit is filled with the resinous magnet.

20. The method as defined in Claim 19, further comprising using the at least one pin to push the rotor core out of the die when the resinous magnet has hardened.

21. A rotor core produced in accordance with the method of Claim 19.

22. The method as defined in Claim 1, wherein each slit has a respective first end and a respective second end, and the die has a plurality of permanent magnets having poles, the method comprising positioning the rotor core in the die with the first ends and the second ends of the slits aligned with the poles of the permanent magnets.

23. A rotor core produced in accordance with the method of Claim 22.

24. The method as defined in Claim 1, wherein the die comprises at least one ejector pin that abuts a face of the rotor core when the rotor core is positioned in the die, the method further comprising pushing on the at least one ejector pin to force the rotor core out of the die when the resinous magnet in the slits has hardened.

25 A rotor core produced in accordance with the method of Claim 24.

26. A rotor core having embedded magnets, the rotor core constructed in accordance with the process of:

positioning a rotor core structure into a die, the rotor core structure having a first positioning element, the die having a second positioning element, the first positioning element engaging the second positioning element to hold the rotor core structure in a fixed position with respect to the die;

filling the slits in the rotor core structure with resinous magnet;

applying a magnetic field to the resinous magnet in each slit to establish a magnetic orientation for the resinous magnet in each slit, the first positioning element and the second positioning element preventing the rotor core structure from moving under the influence of the magnetic field;

hardening the resinous magnet in each slit; and

extracting the rotor core structure from the die.

27. The rotor core as defined in Claim 26, wherein the first positioning element is formed on an outside circumference of the rotor core structure in a location selected to align with the second positioning element when the rotor core structure is positioned in the die.

28. The rotor core as defined in Claim 27, wherein the first positioning element comprises at least one recess in the outer circumference of the rotor core structure, the recess having a shape selected to engage at least one projection on the inner circumference of the die.

29. The rotor core as defined in Claim 28, wherein the first positioning element comprises a plurality of recesses in the outer circumference of the rotor core structure.

30. The rotor core as defined in Claim 26, wherein the first positioning element is formed on at least one face of the rotor core structure, the first positioning element located on the at least one face of the rotor core structure to be in alignment with the second positioning element on at least one surface of the die when the rotor core structure is placed in the die with the at least one face of the rotor core structure abutting the at least one surface of the die.

31. The rotor core as defined in Claim 30, wherein the first positioning element comprises a recess in the at least one face of the rotor core structure, the recess having a shape selected to engage with a projection on the at least one surface of the die.

32. The rotor core as defined in Claim 26, wherein the rotor core structure includes a shaft hole having a keying portion, the shaft hole and the keying portion having shapes selected to engage a keyed alignment pin of the die when the rotor core structure is positioned in the die.

33. The rotor core as defined in Claim 26, wherein the rotor core structure includes a shaft having the first positioning element formed thereon, and wherein the die includes a hole that receives the shaft, a portion of the hole forming the second positioning element, the shaft and the first positioning element being configured to engage the second positioning element portion of the hole in the die when the rotor core structure is positioned in the die.

34. The rotor core as defined in Claim 33, wherein the shaft of the rotor core structure has an outer circumference and the first positioning element is a rib on the outer circumference of the shaft, the rib being aligned with an axis of the shaft, the rib having a shape selected to engage with a groove formed in the inner circumference of the hole of the die when the rotor core structure is positioned in the die and the shaft of the rotor core structure is positioned in the hole of the die.

35. The rotor core as defined in Claim 26, wherein the first positioning element comprises at least one of the slits of the rotor core structure, and wherein the second positioning element comprises at least one pin in the die, the at least one pin moveable in a direction aligned with an axis of the at least one pin, wherein the rotor core structure is positioned in the die with the at least one of the slits aligned with the at least one pin, the at least one pin entering the slit to preclude movement of rotor core in any direction other than the direction aligned with the axis of

the at least one pin, the pin being extracted from the slit as the slit is filled with the resinous magnet such that the resinous magnet fills the slit substantially without any voids.

36. The rotor core as defined in Claim 26, wherein each slit has a respective first end and a respective second end, and the die has a plurality of permanent magnets having poles, the rotor core structure fitting into the die such that the first ends and the second ends of the slits are aligned with the poles of the permanent magnets.